

S-E-C-R-E-T

EXHIBIT "A"

DEVELOPMENT OF SPACE, TIME, AND MOVEMENT

FACTORS FOR ECONOMIC-MILITARY MODEL

---

I. Objective:

A. Over-all Objectives: To develop spatial, dynamic, transportation factors for the currently developing economic-military model as a necessary and important step in attaining a capability for symmetrical analysis.

This study involves the development of new geographical concepts for introduction into the economic-military model of the Soviet Bloc developed under Contracts AF 33(600)-30578 and AF 33(600)-30590. The specific objectives of this project are: To develop methods for introducing geographical and locational transportation data for industry into the economic-military model of the Soviet-Bloc. These should be such that the effects of reductions in transportation in a given area of the Soviet Bloc upon the industrial, logistic, and general economic strengths of the Soviet Bloc can be analyzed and determined. These factors and methods also should permit determination of the effects of changing demands on transportation resulting from military, industrial or economic losses. The factors or coefficients developed must be suitable for inclusion as an integral part of the consolidated economic-military model.

DETAILED DESCRIPTION OF PROJECT

The achievement of the preceding overall objectives will require performance of the following tasks:

a. Model Technique

The first task shall be the design of an analytical technique, involving new geographical concepts, which will make it possible to introduce spatial transportation into the economic-military model of the Soviet Bloc developed under Contracts AF 33(600)-30578 and AF 33(600)-30590. The technique shall be designed to make possible either as an integral part of the economic-military model itself or by means of a separate transportation model, if the latter proves more advisable, the analysis of the entire set of repercussions on enemy industrial and logistic capability of the reduction or destruction of transportation facilities. It shall also make possible determination of the effects of military and economic losses on transportation as such.

The model technique so developed shall take realistic account of both data and computation requirements. Preferably,

S-E-C-R-E-T

S-E-C-R-E-T

it should be capable of various degrees of refinement and accuracy so as to permit continuous adaptation to AFOIN-3 purposes as the latter's data and computation resources change.

It shall cover road, railroad, river, canal, pipeline, maritime, and air transportation. It shall be sufficiently comprehensive to embrace all movements of military and civilian goods and persons between cities and regions in the whole Soviet Bloc (including China). (If necessary, transportation within cities may be dealt with in an aggregative way.) It shall devise resource element classifications in the transportation sector itself, which may be comprised of both physical components and time, e.g. car days, locomotive days, truck days, repair shop hours, skilled man-hours, etc., suitable for integration into the industrial and military grids constructed under Contracts AF 33(600)-30578 and AF 33(600)-30590. It shall take account of the different commodity and personnel transportation requirements placed upon the transportation net or segments of the net by different degrees and kinds of operation of the military and industrial resource elements in the cities and designated economic regions and/or transportation regions. It shall pay specific attention to the normal distribution of rolling stock and to the location of transportation-producing installations and their contributions to the current traffic pattern. The model shall be devised initially on the basis of current traffic patterns. It shall be considered that current traffic is close to the maximum possible with present physical plant. All mobile equipment shall be accounted for in the "pipeline", and the city and/or region of origin and termination of all tonnage moved shall be accounted for. It shall reflect changing demands resulting from modifications or shifts in the traffic pattern geographically and in terms of the resource element classifications which have been devised. It shall allow for substitution of one mode of transportation for another where feasible. It shall pay particular attention to the location of bottleneck points in the transportation system. It shall also provide for the possibilities of overcoming gaps in a transportation connection by means of repair, improvisation, or re-routing. It shall take full account of lead-times so as to be capable of integration into complete time-phased simulations of Sov-Bloc industrial and military capability under mobilization and post-attach conditions, and into symmetrical analysis.

The technique shall be developed and tested using several different methods, some where a spatial transportation model is built into the economic-military model, others where a transportation model is used as a separate "feasibility" testing device attached to the economic-military model. Such development and testing shall be done with small-scale pilot

*Unless data is more realistic than we've seen. The latter won't work*

S-E-C-R-E-T

S-E-C-R-E-T

models on an electronic computer, aiming at an accumulation of knowledge that will permit the final establishment of a successful technique or set of alternative techniques.

b. Computation Techniques and Programming

All model techniques shall be reduced to the most efficient mathematical logic or analysis suitable for rapid solution on an advanced electronic computer. Required machine programs will be constructed, tested, and perfected for the full scale model.

c. Data Assembly and Model-Building

Simultaneously with the development of the model technique, a systematic assembly of data on the transportation network and the detailed transportation facilities of the Soviet Bloc shall be conducted. When the model technique has been developed, the design of the model itself shall be determined in the light of the available data, the model technique, and computation considerations. A complete framework of data requirements for the operating model shall then be designed. The general body of data assembled shall be manipulated to provide the data required to meet model specifications, and any additional data requirements which are assembled or estimated shall be in accordance with model specifications.

d. Ultimate Product

The ultimate product of this project shall be a model technique, a complete set of operating model specifications, computing programs, and a body of data on Soviet Bloc transportation network and facilities meeting model data specifications.

**General Provisions:**

1. Data collection will be from both classified and unclassified sources, with particular emphasis to be placed on the use of classified reports completed by the intelligence components of the three Military Services, the Department of State, and the Central Intelligence Agency.

2. The contractor is to render three quarterly progress reports, and the final report in five copies. In addition, as various stages of the work are completed, substantive reports relating to them will be rendered by the contractor; such oral briefings as may be considered appropriate and useful shall also be provided. All substantive reports shall be provided in fifty (50) copies, together with a reproducible master.

3. Close liaison with representatives of the office of the Deputy Director for Targets will be maintained continuously by the contractor; also such liaison with other Government contractors as may contribute to the substantive work of the contract.

S-E-C-R-E-T

S-E-C-R-E-T

4. The contractor shall maintain his offices in Washington, D.C. and maintain a technical staff capable of carrying out the substantive work of the contract at a high professional level. In particular, the contractor must have a staff with special and authoritative competence in the following fields:

- a. The economics of Soviet transportation.
- b. Inter-industry analysis.
- c. Transportation technology.
- d. Linear programming, logical (mathematical) design, statistical theory.
- e. Logistics analysis.

5. The contractor will provide adequate space in his office for two Deputy Director for Targets Liaison Officers, and for one additional liaison representative from another government agency as may be requested. The contractor shall consider it a prime responsibility not only to work closely with representatives of the Office of the Deputy Director for Targets, but also to establish adequate working relationships with other government and private agencies which may be working on, or have material contributing to, problems similar or related to those encompassed. Such contacts will be with a view to making the studies exhaustive, resting upon the exploitation of all possible sources and drawing upon the skills and experiences of the maximum number of research personnel.

6. These studies will be classified up to SECRET, with portions of them of TOP SECRET classification.

7. Contractor's personnel in the Washington metropolitan area must be cleared for TOP SECRET as required, and the facility must have a TOP SECRET clearance.

S-E-C-R-E-T